

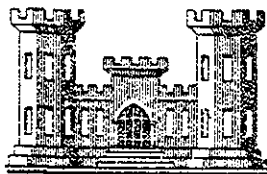
**WATER RESOURCES DEVELOPMENT PROJECT  
NORTH NASHUA RIVER BASIN**

**NOOKAGEE LAKE**

**PHILLIPS BROOK, MASSACHUSETTS**

**DESIGN MEMORANDUM NO. 4**

**RELOCATIONS**



**DEPARTMENT OF THE ARMY  
NEW ENGLAND DIVISION, CORPS OF ENGINEERS  
WALTHAM, MASS.**

**FEBRUARY 1973**



DEPARTMENT OF THE ARMY  
NEW ENGLAND DIVISION, CORPS OF ENGINEERS  
424 TRAPELO ROAD  
WALTHAM, MASSACHUSETTS 02154

IN REPLY REFER TO:

NEDED-E

1 February 1973

SUBJECT: Nookagee Lake, Phillips Brook, North Nashua River Basin -  
Design Memorandum No. 4, Relocations

HQDA (DAEN-CWE-B)  
WASH DC 20314

In accordance with ER 1110-2-1150, there is submitted for review and approval Design Memorandum No. 4, Relocations, for the Nookagee Lake Project, located in the North Nashua River Basin, Massachusetts.

FOR THE DIVISION ENGINEER:

Incl (5 cys)  
as

  
JOHN Wm. LESLIE  
Chief, Engineering Division

WATER RESOURCES DEVELOPMENT PROJECT  
North Nashua River Basin - Merrimack River  
Massachusetts

DESIGN MEMORANDA INDEX

<u>No.</u>	<u>Title</u>	<u>Whitmanville Lake</u>			<u>Nookagee Lake</u>		
		<u>Whitman River</u>			<u>Phillips Brook</u>		
		<u>Scheduled Submission</u>	<u>Submission</u>	<u>Approved</u>	<u>Scheduled Submission</u>	<u>Submission</u>	<u>Approved</u>
1	*Hydrology	May 1970	7 May 1970	10 Jul 1970	May 1970	7 May 1970	10 Jul 1970
1	*Hydrology (Revised)	Jul 1971	15 Jul 1971	2 Nov 1971	Jul 1971	15 Jul 1971	2 Nov 1971
2	General Design	Jul 1971	31 Aug 1971	6 Jan 1972	Mar 1972	22 Dec 1972	
3	Public Use - Land Use Requirement Plan	(To be submitted as an appendix to GDM)					
4	Relocations	Sep 1971	24 Sep 1971	11 Jan 1972	Jan 1973	1 Feb 1973	
5	Real Estate	Apr 1972	15 Sep 1972		Feb 1973		
6	*Concrete Materials	Nov 1970	26 Feb 1971	29 Mar 1971	Nov 1970	26 Feb 1971	29 Mar 1971
7	Site Geology	Dec 1970	31 Mar 1971	29 Apr 1971	Feb 1972	29 Feb 1972	17 Nov 1972
8	Embankments and Foundations	Aug 1971	20 Sep 1971	12 Jan 1972	Jan 1973		
9	Hydraulic Analysis	Mar 1973			Mar 1973		
10	**Detailed Design of Structures	Jun 1972			Sep 1973		

\* Joint Submission for Both Projects

\*\* To be completed upon receipt of construction funds

WATER RESOURCES DEVELOPMENT PROJECT

NORTH NASHUA RIVER BASIN

NOOKAGEE LAKE

PHILLIPS BROOK

MASSACHUSETTS

DESIGN MEMORANDUM NO. 4

RELOCATIONS

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APPENDIX "A"      Attorney's Report

WATER RESOURCES DEVELOPMENT PROJECT

NORTH NASHUA RIVER BASIN

NOOKAGEE LAKE  
PHILLIPS BROOK  
MASSACHUSETTS

A. PERTINENT DATA

1. Purpose Flood Control, Water Quality Control, Recreation (Limited)

2. Location of Dam

State	Massachusetts
County	Worcester
Towns	Westminster & Ashburnham
River	Phillips Brook

Distance from:

Confluence Phillips Brook and North Nashua River	3.1 miles upstream
Confluence North Nashua and Nashua Rivers	17 miles upstream
Fitchburg, Mass.	3.6 air miles, northwest
Worcester, Mass.	23 air miles, north
Boston, Mass.	40 air miles, northwest

3. Drainage Areas

Phillips Brook at damsite	10.8 square miles
Phillips Brook at mouth, confluence with North Nashua River	15.9 square miles
North Nashua at mouth, confluence with Nashua River	132 square miles
Nashua River at mouth, confluence with Merrimack River	530 square miles
Merrimack River at mouth	5000 square miles

4. Stream Flow

Record of USGS Gaging Station on North Nashua River near Leominster, (Drainage Area - 107 square miles) September 1935 to September 1967.

<u>Time</u>	<u>c.f.s.</u>	<u>c.f.s./square mile</u>
Average Annual (32 Years)	188.3	1.76
Maximum Year* (1956)	307	2.87
Minimum Year* (1965)	81.2	0.76
Maximum Month (Mar. 1936)	1,289	12.05
Minimum Month (Aug. 1941)	38.1	0.36
Maximum Day (18 Mar. 1936)	7,530	70.37
Minimum Day (27 Sep. 1936)	22	0.21
Instantaneous Max. (18 Mar. 1936)	16,300	152

\* Water Year, Oct. 1 through Sept. 30

#### 5. Maximum Floods of Record

Record of USGS Gaging Station on North Nashua River near  
Leominster, Massachusetts.

<u>Time</u>	<u>c.f.s.</u>	<u>Peak Discharge c.f.s./square mile</u>
18 March 1936	16,300	152
21 Sept. 1938	10,300	96
15 Oct. 1955	8,870	83
25 June 1944	8,100	76
12 March 1936	5,500	51

#### 6. Reservoir Elevations, Areas and Capacities

<u>Location</u>	<u>Elevations Ft., msl</u>	<u>Area Acres</u>	<u>Acre Feet</u>	<u>Inches on Drainage Area</u>
Streambed at Dam	750.0			
Conservation Pool	790.0	50	700	1.2
Water Quality Control Storage	816.0	190	3,000	5.2
Flood Control Storage	835.0	316	4,700	8.2
Spillway Crest	835.0	316	8,400	14.6
Maximum Surcharge	841.7			
Recreation (Limited) El. 816.0-790.0				

## 7. Dam and Appurtenant Structures

### a. Dam

Type	Rolled earth fill with rock protection
Top elevation	846.5
Top Width, Feet	25
Maximum Base Width, Feet	800
Maximum Height, Feet	105
Length, Feet	2,000
Slope, upstream above berm	1 on 3
Berm at elevation	770.0
Slope, upstream below berm	1 on 6
Slope, downstream to berm	1 on 2.5
Berm @ Elevation (between Sta. 6+70 - 15+00)	770.0
Freeboard, feet:	
above spillway design surcharge	4.8
above freeboard design surcharge	5.2

### b. Spillway

Type	Uncontrolled concrete weir, "I"-Shape, side channel in rock
Crest Length, Feet	215
Effective Length, Feet	201.3
Crest Elevation, Feet, m.s.l.	835.0
Maximum surcharge, Feet	6.7
Spillway design discharge, c.f.s.	13,900



7. Dam and Appurtenant Structures (Cont'd)

c. Outlet Works

\* (1) Flood Control

Type	Upstream intake tower; dry-well type and reinforced concrete, rectangular shaped, cut-and-cover conduit
Size of Conduit	3' x 5'
Length of conduit, portal to portal, feet	488
Conduit invert elevation, feet, m.s.l.	753.0
Number of Gates	
Service Gates	One
Emergency Gates	One
Size of Gates	3' x 4'
Type of Gates	Hydraulic operated vertical slide gates
Elevation gate sill, feet, m.s.l.	753.0

Discharge capacity of outlet, reservoir at spillway crest, = 470 c.f.s.

\* Subject to change in design refinement.

(2) Water Quality Control

Type	Three inlets with a common standpipe discharging into the flood control conduit
Inlets	
Size of inlets	2'-6" x 3'
Elevations of inlets @ centerline	805.0, 793.0, 781.0
Number of gates	Three
Size of gates	2'-6" x 3'
Type of gates	Slide
Number of valves	Three
Size of valves	30" dia.
Type of valves	Knife gate
Standpipe	
Size	48-inch dia.
Gate (branch conduit)	1-3'x4' hydraulically operated slide gate

8. Criteria for Spillway Design Flood

Peak inflow, c.f.s.	16,500
Total volume of rainfall, inches	21.8
Infiltration rate, inches per 3-hour period	0.20
Total volume of runoff, acre-feet	11,600
Total volume of runoff, inches	20.2
Duration of storm, hours	24
Reservoir stage at start of flood, ft. m.s.l.	835.0
Gates	Closed

9. Relocations

a. <u>Roads</u>	<u>Existing Mileage</u>	<u>Proposed Mileage</u>
Highways	2.5	3.9
b. <u>Utilities</u>		
Electric Distribution lines	2.0	2.0
Telephone Exchange lines	2.8	3.0

10. Principal Quantities

Common Excavation, General	293,000 c.y.
Common Excavation, Borrow	1,160,000 c.y.
Rock Excavation, Open Cut	56,000 c.y.
Rolled Earth Embankment	1,200,000 c.y.
Gravel Bedding, Gravel Fill & Sand Fill	148,000 c.y.
Rock Slope Protection	68,000 c.y.
Concrete	5,590 c.y.
Cement	8,400 bbl.
Steel Reinforcement	330,000 lbs.

11. Estimated Project Cost (1972 Price Level)

Lands and Damages	1,500,000
Relocations	1,410,000
Reservoir	650,000
Dam and Appurtenant Structures	5,150,000
Access Road	5,000
Recreation Facilities	15,000
Buildings, Grounds and Utilities	130,000
Permanent Operating Equipment	60,000
Engineering and Design	910,000
Supervision and Administration	<u>670,000</u>
Total Estimated Project Cost	\$10,500,000

12. Economic Analysis

<u>Purpose</u>	<u>Annual Benefits</u>	<u>Allocated Annual Costs</u>	<u>Benefit/Cost Ratio</u>
Flood Control	\$ 730,000	\$368,000	1.98
Recreation (Limited)	34,000	23,000	1.50
Water Quality Control	<u>453,000</u>	<u>297,000</u>	<u>1.52</u>
Total	\$1,217,000	\$688,000	1.77

13. Construction Period

Dam and reservoir and  
appurtenant structures

3 years

## B. RELOCATIONS

1. SCOPE. - This memorandum provides a description of existing highways and utilities, in the vicinity of Nookagee Lake which will be relocated outside the reservoir area or abandoned. General plans, data, Attorney's Report and cost estimates of the proposed relocations or abandonments are presented. This memorandum is intended to secure approval as a basis for negotiating relocation agreements with the owners.

2. PROJECT LOCATION. - The proposed Nookagee Lake will be located on Phillips Brook within the towns of Westminster and Ashburnham in north central Massachusetts. The dam site is about 3.6 miles northwest of Fitchburg on State Highway, Route 12. The reservoir at spillway crest elevation, 835.0 mean sea level, will extend upstream along Phillips Brook about 1.5 miles into the town of Ashburnham.

3. DAM. - The dam will be a rolled earth fill structure about 2000 feet long and 105 feet high. The top of the dam is at elevation 846.5. A spillway will be located east of the dam. A 3' x 5' conduit will pass through the structure with invert elevation 753 mean sea level.

4. GENERAL. - One State Highway, Route 12 and three local roads, Dean Hill Road, Fred Smith Road and Bean Porridge Hill Road are in the reservoir area. Route 12 will be relocated with connectors to Dean Hill Road, Fred Smith Road, Sheldon Road and McIntire Road. Bean Porridge Hill Road will be dead ended, to the north, and access to the relocated Route 12 will be southerly via relocated Bean Porridge Hill Road (Spur Road). Roads to be relocated will have a minimum profile grade of 840.0 which is 5 feet above spillway crest elevation.

The guide taking line, for purposes of this design memorandum, has been established at 5 feet above spillway crest elevation and does not delineate the limits of land acquisition which will be acquired in accordance with EM 405-2-150.

There are no railroads, cemeteries or public buildings located within the reservoir area.

## 5. ENVIRONMENTAL EFFECTS.

The relocated highway will be routed through undisturbed land, so consequently will have, on the whole, an adverse effect on the natural environment. The most important effect will be the destruction of about 23 acres of woodland and 15 acres of pasture land. Other adverse effects will be the creation of cut and fill slopes, the exposure of land areas

to erosive action, and destruction of wildlife habitat represented by the 38 acres.

As relocated, the new highway will disrupt as small an area as possible. Relocation to the east, away from the proposed lake will provide for a wooded buffer zone between the proposed lake and through traffic and will provide land area for recreation. All the exposed disturbed areas adjacent to the highway will be topsoiled and seeded, a total of about 73,000 sq. yds. Connecting roads, (Dean Hill, Fred Smith, Bean Porridge Hill, Sheldon and McIntire Roads) will have topsoiled and seeded side slopes and will be properly finished for a pleasing appearance. Planting of trees and shrubs will be provided where they will assist in enhancing the appearance of the relocated roads.

6. IDENTIFICATION. - Each road, or section of road, in the vicinity of the reservoir area, where some modification will be required, is identified on Plate No. 4-1 with a number cross referencing it to the text and indicating the type of modification.

7. TRAFFIC COUNTS. - Traffic counts which are shown in the pertinent paragraphs of this memorandum, were taken in April 1969 by the Massachusetts Department of Public Works and are considered to be representative at the present time.

8. HIGHWAY RELOCATION CONTRACTS. - Officials of the Massachusetts Department of Public Works have advised that they will acquire all land required, award and supervise construction contracts for relocation of Route 12 under cost reimbursable contracts. Lump sum contracts will be executed with the Commonwealth of Massachusetts for engineering, design and preparation of contract plans and specifications for Route 12 relocation. The State's interest is limited to the relocation of Route 12 and its intersecting roads and does not include the spur road or the road work to be performed during construction of the dam and reservoir. The latter work will be incorporated in the general contract for the dam.

Cost reimbursable contracts will be negotiated with the City of Fitchburg and the towns of Westminster and Ashburnham which will cover all required road modifications and provide for reimbursement for necessary legal expenses incurred in the abandonment of existing roads and acceptance of the related roads.

9. STATE HIGHWAY - ROUTE 12. (See Plate 4-1). State Route 12 is a north - south highway which extends, in Massachusetts, from the Connecticut border near Webster, Mass. to the New Hampshire border near Winchendon, Mass. It passes through Worcester, Leominster and Fitchburg in Massachusetts. It connects New London, Connecticut in the south with Bellows Falls, Vermont in the north.

Traffic counts taken by the State of Massachusetts in April 1969 show an ADT volume of 3540 vehicles. The estimated ADT for 1990 is 2760 vehicles. This decrease is based on the fact that proposed Route 52 is scheduled for construction by 1990 and will result in a transfer of traffic from Route 12 to the new road.

The bituminous pavement for the existing length of Route 12, to be relocated, is 23' wide with 3.5' paved shoulders and is in good condition. There are no bridges in the section of road being relocated.

A section of this highway about 1.5 miles in length, as shown on Plate 4-1, Identification No. 1, is within the reservoir area and will be abandoned. A replacement highway will be constructed on the easterly side of the reservoir, as shown on Plate 4-1, Identification No. 2. Because of rugged terrain in the area of the proposed dam it will be necessary to construct about 3.01 miles of relocated road to replace that portion being abandoned. Relocated Route 12 will be constructed to conform with Massachusetts Department of Public Works HIGHWAY DESIGN MANUAL for traffic volume of 3540 ADT.

The roadway pavement will be constructed 24' wide with 10' gravel shoulders. Roadway pavement will be 2-inch bituminous concrete on a 12-inch gravel base. Due to the steepness of the grade an additional truck climbing lane, about 1.6 miles in length, will be required between the McIntire Road connector and the Fred Smith Road connector.

That portion of Route 12, downstream of the dam, will remain in service and will be connected to the relocated Route 12 as shown on Plate 4-1, Identification No. 5.

Four alternates were considered for relocation of Route 12. One route was rejected when field investigations showed a building had been constructed, in the path of the proposed road, which did not show on the maps. A second route was rejected because of the steep grades required. The third and fourth layouts were somewhat similar but the fourth layout was selected as being somewhat better in sight distances and involved the taking of only one dwelling. This is the layout shown on Plate No. 4-1, Identification No. 2.

#### 10. LOCAL ROADS.

a. Dean Hill Road. - The existing road is a town road, has a 14' wide bituminous treated surface with no shoulders and an ADT volume of less than 100. Approximately 2000' of this road is located within the reservoir area and will be abandoned.

A connection between Dean Hill Road and relocated Route 12 will be

provided to give continued access from Dean Hill Road to Route 12, as shown on Plate 4-1, Identification No. 3. The connection from the west would serve only that portion of Dean Hill Road between the reservoir and Route 12 since the remainder of Dean Hill Road will be abandoned. The connection from the east will provide access to Route 12 the same as at present. The new connector will be a bituminous surface with gravel shoulders.

b. Fred Smith Road. - The existing road is a town road part of which is an 11' gravel surface and part of which is an 11' bituminous treated surface and an ADT volume of less than 100. Approximately 1000' of this road is located within the reservoir area and will be abandoned.

A connection will be provided between Fred Smith Road and relocated Route 12, as shown on Plate 4-1, Identification No. 4. The westerly connector would serve that portion of Fred Smith Road between the reservoir and relocated Route 12. The connection from the east will provide access to Route 12 the same as at present.

c. Bean Porridge Hill Road. - The existing road is a town road, part of which is a 10' bituminous treated surface and part of which is a 10' gravel surface and an ADT volume of less than 100. The Bean Porridge Hill Road is the primary route for town vehicles (located in the western part of town) servicing the northeasterly segment of town. Approximately 1200 feet of this road is located within the reservoir area and will be abandoned. The road will be dead ended and a new road constructed which will connect to existing Route 12 as shown on Plate 4-1, Identification No. 7. Any traffic which formerly went north onto Route 12 will go southerly onto relocated Route 12 via relocated Bean Porridge Hill Road and existing Route 12, as shown on Plate 4-1.

The Selectmen of Westminster have asked that consideration be given to providing an additional section of road from the intersection of relocated Bean Porridge Hill Road and existing Route 12 eastward to relocated Route 12 (shown dotted on Plate 4-1). This would be to provide shorter access for vehicles travelling on Bean Porridge Hill Road to relocated Route 12 (fire apparatus, police, etc.) Without this section of road it would be necessary to travel an additional distance of one mile to get from Bean Porridge Hill Road to relocated Route 12. The cost for this section of road (\$143,000) and its steep grade (7%) does not seem to justify its installation in order to avoid the additional one mile of travel and this section of road has not been included.

d. McIntire Road. - The existing road is a city road, has a 15' wide bituminous treated surface with 2' gravel shoulders and an ADT volume of less than 100 cars.

A connection between McIntire Road and relocated Route 12 will be

provided to give continued access from McIntire Road to Route 12. Since McIntire Road is below the dam, none of the road will be in the reservoir area and it will not be necessary to abandon any of the road. See Plate 4-1, Identification No. 6.

e. Sheldon Road. - The existing road is a city road, has a 14' wide bituminous treated surface and an ADT volume of less than 100 cars. A connection between Sheldon Road and relocated Route 12 will be provided as shown on Plate 4-1, Identification No. 8.

11. HIGHWAY DESIGN CRITERIA. - Route 12 relocation will be constructed to conform with Massachusetts Department of Public Works design standards as described in Paragraph 8 of this Design Memorandum. Detailed criteria - used in the design of major drainage structures will be determined by Massachusetts DPW and verified by New England Division. No traffic projections will be used.

12. MAIL AND SCHOOL BUS ROUTES. - There is a box delivery RFD route for mail. The present route of delivery is west on Dean Hill Road to Route 12, then south on Route 12. The residents on Bean Porridge Hill Road, Fred Smith Road, Potato Hill Road and McIntire Road all have their mail boxes located on Route 12 and no mail is delivered on these roads.

The proposed mail route would be the same as existing (using relocated Route 12) except that it will be necessary to provide delivery to that portion of existing Route 12, south of the dam, which is to remain in service and a short portion of Dean Hill Road between the reservoir and relocated Route 12.

School bus routes for the City of Fitchburg will not be affected by the Route 12 relocation.

There is a school bus route for the Oakmont Regional High School in Ashburnham which utilizes Route 12. The present route is from Ashburnham south on Route 12 to the Fitchburg city line. Here the bus turns around and heads north on Route 12, turns east on Dean Hill Road to the Fitchburg city line. The bus turns here and proceeds back on Dean Hill Road to Route 12 and then north to Ashburnham.

This route would be altered by the relocation of Route 12 and would necessitate backtracking to pick up those pupils on the existing Route 12, south of the dam, which is to remain in service. This would involve an additional distance of about 2 miles.

The town of Westminster has bus routes for both grammar school and kindergarten.

The grammar school route is north from Westminster to Ashburnham



then south from Ashburnham on Route 12, east on Dean Hill Road to the Fitchburg town line, west again on Dean Hill Road to Route 12, south on Route 12 into Fitchburg and then west to Westminster outside the reservoir area. At night this route is reversed. The relocation of Route 12 will have very little affect on this school bus route.

The kindergarten route is south on Route 12 from Ashburnham, west on Bean Porridge Hill Road to South Ashburnham Road. At night this route is reversed.

This route would be altered so that travel would be south on relocated Route 12, then north on existing Route 12 to relocated Bean Porridge Hill Road which connects with existing Bean Porridge Hill Road.

13. ATTITUDE OF LOCAL OFFICIALS. - The plans for proposed highway relocations and modifications as described herein have been reviewed with officials of the Massachusetts Department of Public Works, the towns of Ashburnham and Westminster, and the City of Fitchburg. All have indicated informally that they are in agreement with the proposed plans. However, the Selectmen of Westminster have requested that consideration be given to an additional section of road as described in subparagraph 9c.

14. OVERLOOK AREA. - A visitor's overlook area has been tentatively located high on the left abutment of the dam. The area will consist of entrance and exit roads and a bituminous concrete parking area for 15 cars. Access will be from the Relocated Route 12.

15. SURFICIAL AND SUBSURFACE INVESTIGATIONS. - Preliminary investigations for the Route 12 road relocation at the Nookagee Lake project consist of reconnaissance and the completion of 11 borings. As agreed with representatives of the Massachusetts Department of Public Works, the borings in this "pilot" program were located in areas where deep or extensive "cuts" are required. Overburden sampling was accomplished in the borings by driving a 1-1/2 inch I.D. split spoon sampler with a 140 lb. hammer falling 30 inches. Samples were taken at 5 foot intervals or at changes in materials. Soil samples were classified in accordance with the Massachusetts Department of Public Works Soils Classification System. Bedrock, when encountered, was diamond drill cored generally to a minimum penetration of fifteen (15) feet. Additional explorations consisting of borings and test trenches will be completed for final design.

16. HIGHWAY COST ESTIMATES. - The estimated costs of all road relocations and modifications were computed from aerial survey maps, scale 1" = 200' and 5 foot contour interval, is summarized as follows:

<u>Highway</u>	<u>Approximate Length</u>	<u>Estimated Construction Cost</u>
McIntire Road Connector	800'	\$ 18,000
Route 12	16,000'	955,000
Overlook (Route 12)	-	11,000
Spur Road	2,750'	216,000
		<u>\$1,200,000</u>
Engineering & Design 12.5%		150,000
		<u>1,350,000</u>
Supervision & Administration 9%		108,000
Total Highway Relocations		<u>\$1,458,000</u>

A detailed breakdown is as follows:

McINTIRE ROAD CONNECTOR

Estimated Relocation Cost

<u>ITEM</u>	<u>QUANT.</u>	<u>UNIT PRICE</u>	<u>TOTAL</u>
Excavation to Fill	1,800 CY	\$ 0.60	\$ 1,080
Compacted Fill	1,735 CY	0.40	694
Stripping to Spoil	795 CY	1.60	1,272
Stripping for Topsoil	340 CY	0.20	68
12" Gravel Base	1,525 CY	3.20	4,880
2" Bitum. Concrete	3,660 SY	1.50	5,490
6" Topsoil (from stripping)	290 CY	2.00	580
Seeding	1,565 SY	0.50	783
Guard Rail	275 LF	4.00	1,100
			<u>15,947</u>
	Contingencies 15%		<u>2,353</u>
		TOTAL	\$18,300
		USE	\$18,000

# ROUTE 12

## Estimated Relocation Cost

<u>ITEM</u>	<u>QUANT.</u>	<u>UNIT PRICE</u>	<u>TOTAL</u>
Clearing	17 AC	\$ 800	\$ 13,600
Stripping to Spoil	20,300 CY	1.60	32,480
Stripping for Topsoil	8,700 CY	0.20	1,740
Earth Excav. to Fill	99,000 CY	0.60	59,400
Compacted Fill	38,770 CY	0.40	15,508
Rock Borrow to Fill	1,190 CY	0.50	595
Rock Excav. to Fill	23,600 CY	5.20	122,720
3" Bitum. Concrete	54,550 SY	1.65	90,008
1 1/2" Bitum. Concrete	83,600 SY	2.45	204,820
1/2" Comp. Crushed Stone	9,300 CY	5.25	48,828
8" Gravel Base	21,300 CY	3.00	63,900
Guard Rail	7,650 LF	4.00	30,600
Curb - Bituminous	8,100 LF	1.50	12,150
6" Topsoil from Stripping	9,165 CY	2.00	18,330
6" Topsoil (Borrow)	3,645 CY	6.00	21,870
Seeding	61,000 SY	0.50	30,500
Culverts	Job	65,520	65,520
			\$832,569
	Contingencies 15%		124,431
	TOTAL		\$957,000
	USE		\$955,000

# ROUTE 12 OVERLOOK

## Estimated Cost

<u>ITEM</u>	<u>QUANT.</u>	<u>UNIT PRICE</u>	<u>TOTAL</u>
2" Bitum. Concrete	2,145 SY	\$ 1.50	\$ 3,218
12" Gravel Base	820 CY	3.20	2,624
Stripping to Spoil	250 CY	1.60	400
Stripping for Topsoil	110 CY	0.20	22
Common Excav.	535 CY	0.75	401
Curb - Precast Concrete	16 LF	5.00	80
Guard Rail	431 LF	3.50	1,509
Bumpers - Precast Conc.	51 EA	18.00	918
6" Topsoil (from stripping)	110 CY	2.00	220
6" Topsoil (from borrow)	5 CY	6.00	30
Seeding	530 SY	0.50	265
			\$ 9,687
	Contingencies 15%		1,413
	TOTAL		\$11,100
	USE		\$11,000

SPUR ROAD  
(BEAN PORRIDGE HILL ROAD CONNECTOR)

Estimated Relocation Cost

<u>ITEM</u>	<u>QUANT.</u>	<u>UNIT PRICE</u>	<u>TOTAL</u>
Clearing	8 AC	\$ 800	\$ 6,400
Stripping to Spoil	6,300 CY	1.60	10,080
Stripping for Topsoil	2,700 CY	0.20	540
Earth Excav. to Fill	27,600 CY	1.30	35,880
Earth Excav. to Spoil	9,200 CY	1.30	11,960
Earth Excav. to Fill	1,930 CY	0.60	1,158
Rock Excav. to Fill	10,900 CY	5.20	56,680
6" Topsoil (from stripping)	16,300 SY	1.25	20,375
2" Bitum. Concrete	9,150 SY	1.50	13,725
12" Gravel Base	6,250 CY	3.20	20,000
Guard Rail	1,350 LF	4.00	5,400
Culverts, 24" BCCMP	330 LF	16.50	5,445
			<u>\$187,643</u>
	Contingencies 15%		28,146
		TOTAL	<u>\$215,789</u>
		USE	\$216,000

The above estimates prepared in July 1972, are based on average unit prices which have been bid on similar types of projects in the State of Massachusetts. An additional \$115,000 will be required to pay for land acquisition solely for road relocations.

17. ALLOCATION OF COSTS. - The cost of all highway relocations and modifications, including design as described herein, will be borne by the Government.

18. UTILITY RELOCATIONS. - The relocations and abandonments outlined below will be accomplished by the owners under relocation agreements and will be coordinated with other work in the reservoir area. See Plate 4-2.

a. Electrical Distribution Lines. - The Massachusetts Electric Company owns and operates approximately 10,000 ft. of single phase 2.4 kv distribution lines in the reservoir area on jointly owned poles along Bean Porridge Hill Road, Route 12, and Fred Smith Road in Westminister, Massachusetts. Approximately 1200 ft. of a 2.4 kv line off Route 12 is to be abandoned. Approximately 8,800 feet of 2.4 kv lines along Route 12, Bean Porridge Hill Rd. and off Fred Smith Road are to be relocated. Poles and 2.4 kv lines are approximately 32 years old, except where replacements have been made.

Estimated Costs:

Abandonment

A = Original cost	\$ 504
B = Depreciation	- 314
C = Cost of removal	+ 200
D = Salvage	- 50
Total Cost to Government A-B+C-D =	\$ 340
Contingencies 15%	51
TOTAL	\$ 391

Relocation

E = New Work	\$31,590
B = Depreciation based on present day cost	- 3,830
C = Cost of removal	+ 3,300
D = Salvage	- 1,200
F = Betterments	- 2,000
Total Cost to Government E-B+C-D-F =	\$27,860
Contingencies 15%	4,179
TOTAL	\$32,039

The Ashburnham Municipal Light Department owns and operates approximately 4,200 feet of 2.4 kv single phase distribution lines on jointly owned poles in the reservoir area along Dean Hill Road and Route 12. The lines are approximately 20 years old.

Estimated Costs:

Abandonment

A = Original cost	\$1,000
B = Depreciation	- 600
C = Cost of removal	+ 400
D = Salvage	- 0
Total Cost to Government A-B+C-D =	\$ 800
Contingencies 15%	120
TOTAL	\$ 920

b. Telephone Cables and Rural Lines. - The New England Telephone and Telegraph Company owns and operates cables and rural lines in the reservoir area. A large portion of the relocated lines will be buried along Route 12. This construction will improve reliability of the circuits and there will be no overhead lines and poles to detract from the beauty of the landscape.

# Estimated Costs:

## Relocation

E = New Work	\$56,512
B = Depreciation based on present day cost	7,638
C = Removal cost	9,015
D = Salvage	4,070
F = Cost of system betterment	0
Total Cost to Government E-B+C-D-F =	\$53,519
Contingencies 15%	8,028
TOTAL	\$61,547

Ages of equipment to be relocated.

## Dean Hill Road

Poles: 1-30' 1952  
 4-35' 1952  
 1-30' 1957  
 1-35' 1966

Cable: 1400' of BHBS-25 1967

Terminals: 2 ea. 24 pr.

## Bean Porridge Hill Road

Poles: 1-25' 1939 100% Equity  
 1-35' 1939 50% Equity  
 4-35' 1940 50% Equity

Cable: 1500' of BHBA-50 1966

Terminals: 4 ea. 12 pr.

## Ashburnham Road (Route 12)

Poles:	100% Equity	50% Equity
2-30'	1946	1-35' 1939
1-25'	1947	8-35' 1940
1-30'	1947	1-25' 1946
1-30'	1949	1-35' 1946
1-30'	1952	1-25' 1947
1-25'	1954	1-30' 1954
2-30'	1954	2-35' 1954
17-35'	1954	2-40' 1966
2-25'	1955	1-35' 1968

Cable: 428' of BHBS-25 1969  
 2980' of BHBA-25 1969  
 4759' A51-22 1964  
 3440' of BHBA-25 1964  
 4000' of BHAA-1 1966  
 8400' of BHAA-1 1959

Terminals: 9 ea. 24 pr.

Load Cases: 2-501A Containing 101-632 coils 1959  
 1-124C Containing 50-632 coils 1967  
 1-500A Containing 50-632 coils 1966  
 1-1B1A-54 N Carrier Terminal 1961

c. Sewer. - There are no municipal sewers which will be affected by the road relocations. The nearest sewer is in Route 12, Fitchburg and ends about 300 feet northwest of the intersection with Stickney Road. Disposal is accomplished with individual systems including septic tanks, cesspools and leaching fields.

d. Water Mains. - There is an existing 12-inch water main in Fitchburg which ends at the Westminster town line. This will be unaffected by the road relocations but any future extension of this line, by the City of Fitchburg, would be along relocated Route 12.

There are no existing water mains in either Westminster or Ashburnham which will be affected by the road relocations.

e. General. - Basic water elevation is 835. Telephone and 2.4 kv electric distribution lines if crossing over the reservoir area would have a minimum vertical clearance of 20 feet. Present planning has no requirements for any reservoir crossings.

f. Summary of Utility Relocation Costs.

Electric lines:

Massachusetts Electric Co.	\$32,430
Ashburnham Municipal Light Dept.	920
TOTAL	\$33,350
USE	\$33,500

Telephone lines:

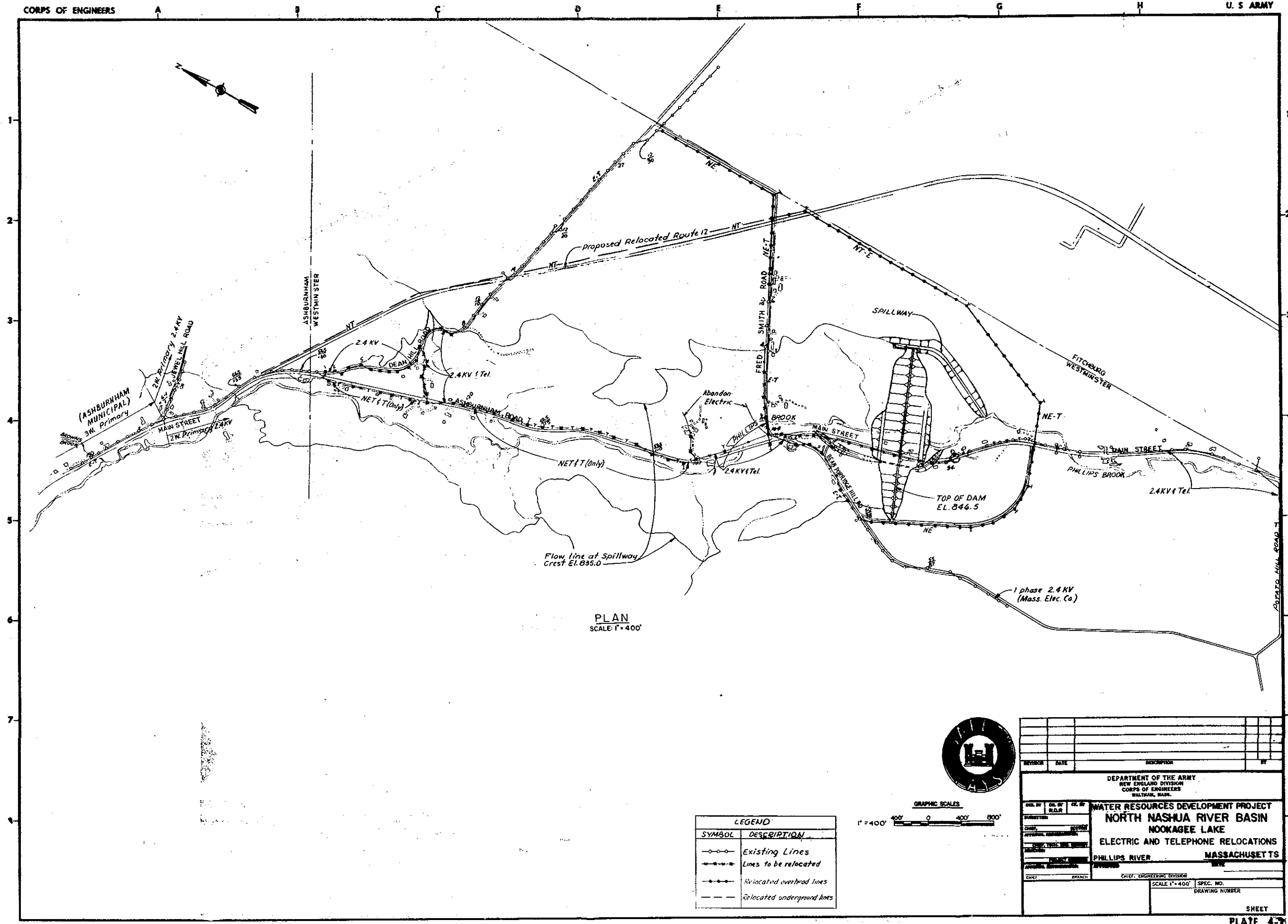
New England T.&T. Co.	61,547
TOTAL	\$95,017
USE	\$95,000

19. SUMMARY OF COSTS.

Highway Construction	\$1,200,000
Land Acquisition	115,000
Utilities	<u>95,000</u>
SUB-TOTAL	\$1,410,000
Engineering & Design 12.5%(\$1,295,000)	160,000
Supervision & Administration 9.0%(\$1,295,000)	<u>115,000</u>
TOTAL	\$1,685,000







APPENDIX "A"

ATTORNEY'S REPORT

## ATTORNEY'S REPORT

RE: Nookagee Lake: Roads and Utilities

1. The Flood Control Act of 1966, Public Law 89-789, 89th Congress, 2d Session, approved 7 November 1966, provided for a flood control project on the North Nashua River, Massachusetts. This project includes the Nookagee Lake. The project has been approved by the Congress substantially in accordance with the recommendations of the Chief of Engineers as they appear in Senate Document numbered 113 of the 89th Congress.

2. Within the proposed dam and reservoir area, portions of Dean Hill Road, Fred Smith Road, and Bean Porridge Hill Road, all in Westminster, will require abandonment as a result of the project. Also, Dean Hill Road and Fred Smith Road will be joined by connectors with the relocated Route #12. Southerly of the dam, Route #12 (Ashburnham Street) will be connected with the remainder of Bean Porridge Hill Road by the construction of a new road. A turnaround will be constructed at the point of abandonment on Route #12 just southerly of the dam. That portion of Ashburnham Street northerly of the dam will be within the reservoir and require abandonment, its function being assumed by the new (relocated) Route #12. In Fitchburg, Sheldon Road and McIntire Road will be joined by connectors with the relocated Route #12; also, a connecting road will be constructed joining relocated Route #12 with (old) Route #12 and crossing the southerly portion of McIntire Road. In Ashburnham a small portion of Main Street (Route #12) will either be relocated or abandoned. There are telephone lines and electric transmission lines which will interfere with the construction and maintenance of the project in Westminster; therefore, relocation, rearrangement, or alteration of these utilities will be required.

a. The names of all parties having jurisdiction over, or title to the facilities or utilities to be relocated or altered are shown in the following pages of this report. This information was obtained from the pertinent county or town land records where the instruments are recorded. Where such instruments are available, the owners of the utilities or facilities furnished such records as possessed which show evidence of an interest in the land.

b. Where a public utility will be destroyed or damaged due to operation of a Civil Works project and relocation or alteration of the facility is required to continue service to the public, as a matter of policy the

Government may assume the cost of relocating or altering the facility, but not the cost of a new right of way, when in fact the utility owner is not presently vested with a compensable interest in the existing right of way. Negotiations with the utility owners will be conducted accordingly and under authority of Section 2 of Flood Control Act of 1938. (52 Stat. 1215, 33 U.S.C. 701 C-1)

3. A number of roads will be affected by the operation of the project and require abandonment and/or relocation.

### Roads

a. Chapter 81 of the General Laws of Massachusetts provides, in pertinent part, as follows:

(1) General Duties of Department of Public Works. -- The department of public works, in this chapter called the department, shall compile statistics relative to the public ways of counties, cities and towns, and make such investigations relative thereto as it considers expedient. It may be consulted by, and shall without charge advise, officers of counties, cities or towns having the care of and authority over public ways as to their construction, maintenance, alteration or repair; but such advice shall not impair the legal duties and obligations of any county, city or town. It shall prepare maps of the commonwealth on which shall be shown county, city and town boundaries, the public ways and the state highways, with their names if practicable, and may sell such maps or other maps prepared by it from time to time in connection with the work under its charge relative to highways at such prices and on such conditions as it may determine. It shall collect and collate information relative to the geological formation of the commonwealth so far as it relates to materials suitable for road building, the location of which it shall, so far as practicable, designate on said maps, which shall be open to the inspection of officers of counties, cities and towns having the care of and authority over public ways. It shall give public notice of and hold at least one public meeting annually in each county for the open discussion of questions relative to the public ways.

(2) Local Officials to Furnish Information to Department. -- County Commissioners and city and town officers who have the care of and authority over public ways shall, on request, furnish the department with any information required by it concerning such ways.

(3) Road Machinery to Be Provided; Purchase, etc., of Storage Quarters, etc. -- Steam road rollers and other road machinery, purchased by the department and owned by the commonwealth shall be managed and maintained under the direction of the department, which may engage competent engineers and mechanics to operate and keep said machines in repair, may purchase all needed materials and supplies, and may incur such other expenses as may be necessary to operate, maintain and transport said machines. Upon the application of the selectmen or road commissioners of a town of not more than twelve thousand inhabitants, the department may furnish such road machinery for use by the town in building or repairing ways therein ...

b. Chapter 82 of the General Laws of Massachusetts provides, in pertinent part, as follows:

(1) Jurisdiction of County Commissioners. County Commissioners within their respective counties may lay out, alter, relocate and discontinue highways and order specific repairs thereon in the manner herein provided, unless other provision is made by law. Sections one to thirteen, inclusive, shall apply to city councils or aldermen when authorized by city charters to lay out, alter, relocate and discontinue highways and to order specific repairs thereon, so far as applicable, and any hearing under any provision of said sections required to be held before a city council or board of aldermen so authorized may be held before a duly authorized committee thereof.

(2) Petition and Bond. - If common convenience and necessity require a new highway from town to town or from place to place within the same town, or the alteration, specific repair or discontinuance of an existing highway, application therefor shall be made by petition in writing, to the county commissioners having jurisdiction thereof. The petitioners shall, if so required by the county commissioners, before any action is taken upon such petition, cause a sufficient recognizance to be given to the county, with surety to the satisfaction of the commissioners, for the payment of all costs and expenses to the county which shall arise by reason of the proceedings on such petition, if the petitioners do not prevail.

(10.) Specific Repairs. - If, upon a petition for the laying out or alteration of a highway, the commissioners, after a view and hearing are of the opinion that the existing highway between the termini mentioned in the petition can be so far amended as to supersede the necessity of laying out a new highway or of altering the location of existing ways, they may, after notice to the towns interested, direct specific repairs to be made in the existing ways in such manner as the public convenience may require; and may apportion the expense thereof upon the county and towns respectively as in laying out highways. At the time of ordering specific repairs upon a highway, they may direct it to be closed for public travel for a reasonable time. Towns in which specific repairs are ordered shall make them. Nothing in this chapter with respect to commissioners' orders for specific repairs shall relieve towns from their duties and liabilities with respect to keeping public ways in repair.

(11) Relocation. - If application is made to the commissioners by a town, or by five inhabitants thereof, to relocate or order specific repairs on a way within such town, whether it was laid out by authority of the town or otherwise, they may, either for the purpose of establishing the boundary lines of such way or of making alterations in the course or width thereof, or of making specific repairs thereon, relocate it in the manner prescribed for laying out highways in sections two to nine, inclusive. The expense shall be assessed upon the petitioners or upon the

county or town, or upon the land benefited by the improvement under chapter eighty, as the commissioners may order. The commissioners may, without petition, after giving notice as provided in section three, relocate any public way for the purpose of establishing its boundaries, or of making specific repairs thereon, in which case no part of the expense shall be assessed upon the town.

The commissioners may adjudicate and decree in respect to a portion of a way described in a petition pending before them, leaving the petition open pending a further or final adjudication and decree in respect to a further portion of said way or a final adjudication and decree as to the remainder of such way.

#### Procedure of City and Town Officers in Respect to Highways

(17) Jurisdiction of Cities and Towns over Highways. - The city council of a city and the selectmen or road commissioners of a town may exercise original jurisdiction, concurrent with the county commissioners, of petitions for altering, relocating or making specific repairs upon a highway within the town limits, but except as to such parts thereof as, by such action, become unnecessary for public use, a city or town shall not discontinue any highway or diminish the width thereof, nor shall it assess upon the county any part of the expense of altering, relocating or repairing. The proceedings of cities and towns and their officers hereunder shall be the same as in the laying out of highways or town ways. Nothing in sections seventeen to nineteen, inclusive, shall diminish the powers over highways granted to a city by its charter.

(18) Record of Action to Be Sent to County Commissioners. - Within two weeks after final action relative to the alteration or relocation of a highway or making specific repairs thereon, under the preceding section, the town clerk shall send a certified copy of the record of such final action to the county commissioners, who shall enter it upon their records.

(19) Appeal to County Commissioners. - An appeal may be taken to the county commissioners from any action under the two preceding sections, and they shall thereupon give a public hearing, with not less than fourteen days' notice thereof, in the manner required in the laying out of highways or town ways and also by publishing in a newspaper a copy of the notice not less than seven days before the hearing. At such hearing the county commissioners may finally decide such appeal.

#### Procedure of City and Town Officers In Respect to Town Ways and Private Ways

(21) Jurisdiction over Town Ways. - The selectmen or road commissioners of a town or city council of a city may lay out, relocate or alter town ways, for the use of the town or city, and private ways for the use of one or more of the inhabitants thereof; or they may order specific repairs

to be made upon such ways; and a town, at a meeting, or the city council of a city, may discontinue a town way or a private way.

(22) Notice. - Seven days at least prior to the laying out, relocation or alteration of a town way or private way a written notice of the intention of the selectmen or road commissioners of the town to lay out, relocate or alter the same shall be left by them, at the usual place of abode of the owners of the land which will be taken for such purpose, or delivered to such owner in person or to his tenant or authorized agent. If the owner has no such place of abode in the town and no tenant or authorized agent therein known to the selectmen or if, being a resident in the town, he is not known as such to the selectmen or road commissioners, such notice shall be posted in a public place in the town seven days at least before the laying out, relocation or alteration of such way. This section shall not apply to cities.

(23) Acceptance by Town. - No town way or private way which has been laid out, relocated or altered by the selectmen or road commissioners shall, except as hereinafter provided, be established until such laying out, relocation or alteration, with the boundaries and measurements of the way, is filed in the office of the town clerk and, not less than seven days thereafter, is accepted by the town at a town meeting. This section shall not apply to cities.

(24) Taking by Eminent Domain and Damages. - If it is necessary to acquire land for the purposes of a town way or private way which is laid out, altered or relocated by the selectmen, road commissioners or other officers of a town under this chapter, such officers shall within thirty days after the termination of the town meeting at which the laying out, alteration or relocation of such town way or private way is accepted by the town, adopt an order for the taking of such land by eminent domain under chapter seventy-nine or institute proceedings for such taking under chapter eighty A. Any person sustaining damage in his property by the laying out, alteration or relocation of a town way or private way shall be entitled to recover the same under said chapter seventy-nine, unless such damage was sustained in connection with a taking made in proceedings instituted under said chapter eighty A, and any persons sustaining damage in his property by the discontinuance of a town way or private way or by specific repairs thereon shall be entitled to recover the same under said chapter seventy-nine. If no entry has been made upon land taken under said chapter seventy-nine for the purpose of a town way, or if the location has for any other cause become void, a person who has suffered loss or been put to expense by the proceedings shall be entitled to recover indemnity therefor under said chapter seventy-nine. If a private way is laid out, relocated, altered or discontinued by a town, or if a town makes specific repairs thereon, or if a town way is discontinued, the persons upon whose application such way is laid out, relocated, altered or discontinued or upon whose application specific repairs are made thereon shall, before such way is entered upon for the purposes of construction, or is closed up, give such town security satisfactory to the selectmen that they will indemnify such town for all damages and charges which it is obliged to pay by reason thereof, and all such damages and charges shall be repaid to the town by the



persons making such application; provided, however, that in case of the discontinuance of a town way the selectmen may order a part of the damages to be paid by the town. The first sentence of this section shall not apply to cities.

Procedure of County Commissioners In  
Respect To Town Ways and Private Ways

(26) Unreasonable Refusal of Selectmen to Act. - If the selectmen or road commissioners unreasonably refuse or neglect to lay out, relocate or alter a town way or private way when requested in writing by one or more of the inhabitants of a town, the county commissioners, on the petition in writing of a person aggrieved, filed within one year after such request, may lay out, relocate or alter such way, and may determine its boundaries and measurements, and, if it is necessary to acquire land for the purposes of such way, may take the same by eminent domain on behalf of the town under chapter seventy-nine, and the costs of the proceedings shall be paid by the town. If it is a private way, the damages and costs, or such part thereof as the county commissioners consider reasonable, shall be repaid to the town by the persons for whose use it was laid out, relocated or altered, and security for such payment, satisfactory to the county commissioners, shall be given to the town by such persons before the way is entered upon for the purpose of constructing or altering the same.

(27) Unreasonable Refusal of Town to Accept a Way. - If a town unreasonably refuses or delays to accept a town way or private way laid out, relocated or altered by the selectmen or road commissioners, any person aggrieved thereby may within one year thereafter apply by petition in writing to the county commissioners, who, unless sufficient cause is shown against such application, may approve the way as laid out, relocated or altered by the selectmen or road commissioners and may direct the laying out, relocation or alteration and approval to be recorded by the clerk of such town, which shall have like effect as if accepted by the town.

(28) Completion of Way by County Commissioners.- If a town in which a town way or private way has been laid out, relocated, altered or approved in pursuance of the two preceding sections does not make and complete the same in the manner prescribed by the county commissioners, and to their satisfaction, within six months after it has been laid out, relocated, altered or approved, or within the time directed by them, they shall, forthwith, cause such way to be completed, and the expenses, interest and charges thereof shall be determined and paid in the manner provided in sections fourteen and fifteen.

(30) Discontinuance by Commissioners.- Upon the application in writing of a person aggrieved by the refusal of a town to discontinue a town way or private way, the county commissioners may order such way to be discontinued. If a town way has been laid out, relocated or altered by the county commissioners, it shall not within two years thereafter be discontinued, relocated or altered by the town; and if such way has been discontinued by the county commissioners, the town shall not within two years thereafter lay out the same again.

(32) Record of Laying Out Conclusive.- When a town way or private way is laid out, relocated or altered by the selectmen or road commissioners or by the county commissioners, they shall in their report or return thereof specify the manner in which such way is laid out, relocated or altered and shall transmit to the town clerk a description of the location and bounds thereof, which shall within ten days be recorded by him in a book kept for that purpose; and no town shall contest the legality of a way laid out by it and accepted and recorded as provided in this chapter. Sections twenty-six to thirty-two, inclusive, shall apply to cities.

(32A) Discontinuance of Certain Ways as Public Ways.- Upon petition in writing of the board or offices of a town having charge of a public way, the county commissioners may, whenever common convenience and necessity no longer require such way to be maintained in a condition reasonably safe and convenient for travel, adjudicate that said way shall thereafter be a private way and that the town shall no longer be bound to keep the same in repair, and thereupon such adjudication shall take effect; provided, that sufficient notice to warn the public against entering thereon is posted where such way enters upon or unites with an existing public way. This section shall not apply to ways in cities.

Main Street (Ashburnham) Also known as Fitchburg Road, this state highway (Route #12) was first laid out as a county (Worcester) road from the Winchendon line southeasterly to the Westminster line on 6 November 1753 and again on 14 September 1819. The Commissioners of the Commonwealth of Massachusetts, Department of Public Works, voted on 2 August 1927 to take over as a state highway that portion of Main Street (Fitchburg Road) affected by the project.

Ashburnham Street (Westminster) Also known as Ashburnham Road, Ashburnham State Road, and the Ashburnham-Fitchburg Road, this state highway (Route #12) was originally laid out by the Worcester County Commissioners in 1753, 1826, and 1828. The Massachusetts Department of Public Works, on 30 November 1915 and 2 August 1927, laid out and took charge of it as a State highway (Layout #2367) with modifications and alterations on various subsequent dates. Ashburnham State Road appears in the Town Street Directory as being 1.97 miles long, running northerly from the Fitchburg line through Westminster and ending at the Ashburnham line.

Ashburnham Street (Fitchburg) This road was laid out by the Worcester County Commissioners as a county road on 22 December 1829 and in December, 1855, with portions widened on 12 May 1931. County and town records describe it as running from the Westminster-Fitchburg line southeasterly to 819 River Street and 2 Westminster Street. Department of Public Works records disclose that this is not a state road; although it is a state highway (Route #12) in Ashburnham (in portion affected by the project) and in Westminster, Ashburnham Street in Fitchburg remained a county road. It is presently laid out as a City of Fitchburg road (Drawer No. 15A-Access No. 1108-1118).

Bean Porridge Hill Road (Westminster) Also known as Bean Hill Road, this road was first listed in Worcester County records as a county road as of 6 November 1753. No definite layout of Bean (Porridge) Hill Road could be found in a search of county and town records; however, the history of the Town mentions a Bean Porridge Hill Road without mapping or further identification. A county "List of Public Roads - Westminster 11-8-40" lists Bean Hill Road as Road #21 running 2.82 miles from the state highway (Ashburnham Street) to South Ashburnham Road ("attested ... as legal public roads ... accepted and not discontinued ..." by the Town Selectmen). Bean Porridge Hill Road appears in the 1970 Street Directory from the office of the Town Coordinator as beginning at 133 South Ashburnham Road easterly to Ashburnham State Road for 1.0 miles. This Directory lists it as not having been accepted. Lastly, Bean Hill Road appears on a listing of public roads dated May 1971 ("Westminster - Chapter 81 Road List") maintained in the office of the Town Clerk as Road #21 and described as extending from state highway (Route #12) to South Ashburnham Road for 2.82 miles. Although the mileage discrepancy exists in the Westminster public records, the road is approximately 2.82 miles by odometer reading. The road has utilities and several structures on it, is paved in various parts, and is in use as an access road between Route #12 and South Ashburnham Road. Notwithstanding the Town Directory, it is the opinion of the undersigned that Bean Porridge Hill Road is a public road under the control and jurisdiction of the Town of Westminster.

Dean Hill Road (Westminster) No definite layout of Dean Hill Road could be found in the town records. However, a Worcester County "List of Public Roads - Westminster 11-8-40" lists Dean Hill Road as Road #65 running 1.06 miles from the Ashburnham State Road to Fred Smith Road. Also a listing of public roads dated May, 1971, (Westminster - Chapter 81 Road List") maintained in the office of the Town Clerk details the same above-mentioned information. Further, Dean Hill Road appears in the 1970 Street Directory from the office of the Town Coordinator as beginning at 245 Ashburnham State Road southerly to Fred Smith Road for 1.06 miles. It is the opinion of the undersigned that Dean Hill Road is a public road under the control and jurisdiction of the Town of Westminster.

Fred Smith Road (Westminster) No definite layout of Fred Smith Road (also known as Smith Road) could be found in the town records. However, a Worcester County "List of Public Roads - Westminster 11-8-40" lists Fred Smith Road as Road #66 running 0.87 of a mile from Dean Hill Road to Ashburnham State Road. Also a listing of public roads dated May, 1971, ("Westminster - Chapter 81 Road List") maintained in the office of the Town Clerk, details the same above-mentioned information. Further, Fred Smith Road appears in the 1970 Street Directory from the office of the Town Coordinator as beginning at 100 Ashburnham Road easterly to Dean Hill Road for 0.87 of a mile. It is the opinion of the undersigned that Fred Smith Road is a public road under the control and jurisdiction of the Town of Westminster.

Sheldon Road (Fitchburg) The City of Fitchburg's list of public roads dates Sheldon Road from 6 March 1769, running from Williams Road westerly to Stickney Road. The present layout is dated 2 April 1940 and filed as Drawer No. 16E-Access No. 7984-7986. This layout shows it running from Williams Road westerly past Stickney Road to end of 1939 Layout, which proceeds just beyond the connector of the proposed relocated Route #12. Also, the "Municipal Register - Fitchburg 1968-9" (a book maintained by the City Clerk) refers to Sheldon Road as running from Williams Road westerly beyond Stickney Road. It is the opinion of the undersigned that Sheldon Road, as to that portion affected by the project, is a public road under the control and jurisdiction of the City of Fitchburg.

McIntire Road (Fitchburg) The City of Fitchburg's list of public roads dates McIntire Road from 1 March 1769, running southwesterly from Williams Road to Stickney Road and subsequently to Ashburnham Street. The present layout is dated 2 April 1940 and filed as Drawer No. 16E-Access No. 7977-7980. This layout shows it running from Ashburnham Street northeasterly past Stickney Road and then Alpine Road and ending at Williams Road. Also, the "Municipal Register - Fitchburg 1968-9" (a book maintained by the City Clerk) refers to McIntire Road in three sections: from 866 Ashburnham Street northeasterly to 410 Stickney Road, 409 Stickney Road easterly to Alpine Road Impassable, and 587 Alpine Road easterly to Williams Road. It is the opinion of the undersigned that McIntire Road is a public road under the control and jurisdiction of the City of Fitchburg.

#### UTILITIES

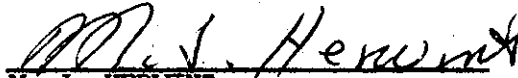
Westminster is the only town containing electric and telephone lines affected by the project.

The New England Telephone and Telegraph Company, a corporation organized and existing under the laws of the State of New York, with its principal office and place of business in the City of Boston, County of Suffolk, Commonwealth of Massachusetts, provides telephone service to the Town of Westminster. The local office in Fitchburg, Massachusetts, claims that its poles resulted from grants by the Town and are recorded with the Town as noted below:

<u>Location</u>	<u>Poles</u>	<u>Granted</u>
Dean Hill Road	1 & 2	4-29-54
	3 - 7	5-12-58
Smith Road	1 - 3	8-19-46
Bean Porridge Hill Road	99	4-22-68
	100 & 102	8- 9-43
	101, 105 - 108	5-10-71
Ashburnham Road	90	4-29-46
	101 - 102	12-28-53
	107-122	12-28-53
	123 & 124	12-28-53
	91 - 106	5-10-71
	125 - 127	5-10-71

Electrical service is furnished to the Town of Westminster both by the Massachusetts Electric Company and by the Ashburnham Municipal Light Department.

The undersigned is of the opinion that the hereinbefore designated have a compensable interest as stated.

  
M. J. HERWINS  
Attorney